

REMARKS/ARGUMENTS

By this Amendment, claims 1 and 10 have been amended. No claims have been canceled and no new claims have been added to the application. Accordingly, claims 1, 3-5, 7 and 10 are pending in the application. No new matter has been added.

In the prior Office Action, the Examiner withdrew the rejections asserted in the Office Action mailed on October 28, 2008, but rejected claims 1, 3-5, 7 and 10 on new grounds and made the rejection of said claims final. Specifically, the Examiner rejected claims 1, 3-5 and 10 under 35 U.S.C. §103(a) as being unpatentable over Daitch et al., U.S. Pat. No. 6,447,991 B1, in view of Lee et al., U.S. Pat. App. Pub. No. US2002/0094318 A1. In addition, the Examiner rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over Daitch et al. and Lee et al. as applied to claim 1 further in view of Chattopadhyay et al., U.S. Pat. App. Pub. No. US2004/0156911 A1. In view of the amendments made to claims 1 and 10 and for the reasons set forth below, applicant respectfully requests reconsideration of the claim rejections.

Daitch et al. discloses a method for producing an aerogel material that is doped with a special bioaffinity compound. In accordance with the Daitch et al. method, a solution (also known as a "sol"), which comprises a silicate monomer (tetraethoxysilane), ethanol, water and a catalyst, undergoes partial hydrolysis and condensation to form a "gel" (because this particular sol includes ethanol, which is an alcohol, Daitch et al. also refers to the "gel" material as an "alcogel"). The "gel" consists of a solid silicate network that is soaking in the ethanol solution. Daitch et al. teaches that a dopant can be added to the alcogel, which reacts with silanol groups on the solid silicate network of the gel. Daitch et al. teaches that the ethanol solution, which the Examiner refers to as both the "second material" and the "liquid phase", is removed by a supercritical fluid drying process. The Examiner admits that the resulting material is not in particle form. In fact, the Daitch et al. process produces a porous body or matrix of doped silicate material.

In an attempt to overcome the deficiencies in the teachings of Daitch et al. (i.e., the failure of Daitch et al. to teach the extraction of the second material from composite particles as claimed), the Examiner cites Lee et al. As noted by the Examiner, Lee et al.

teaches a process for preparing highly porous, low density micron-sized aerogel particles via a sol-gel process that is very similar to that which is disclosed by Daitch et al. The Examiner contends that Lee et al. teaches that which is missing from Daitch et al., namely the use of supercritical fluid for the purpose of extracting a second material from composite particles. On this point, the Examiner is clearly mistaken.

Lee et al. does disclose a sol-gel process that is very similar to that taught by Daitch et al. At col. 4, lines 42-59, Lee et al. teaches that the production of aerogels involves a sol-gel process during which a wet gel containing the substance of interest is formed with a proper solvent and catalyst. After the wet gel with nano-sized pores and a lattice structure has been formed, a supercritical extraction process is used to supercritically dry the gel while avoid potential collapse of the delicate pore and lattice structure. The Examiner is apparently under the belief that the "delicate pore and lattice structure" from which the solvent is extracted using a supercritical fluid in the process according to Lee et al. is a composite particle having a dimension up to about 2 microns. This is incorrect. Lee et al. clearly explains that in order to obtain particles, aerogel material must be milled. Lee et al. states this in col. 3, lines 32-34 ("In both embodiments the resulting aerogels are then milled to the desired final particle size.") and in col. 7 at lines 5-18 as follows:

Since the small particle size and high open porosity are critical for fast and even solubility in pulmonary surfactant and absorption at the mucous membrane, the initial aerogel bodies produced by any of the embodiments are comminuted in any suitable manner. Smaller particle diameters can be obtained while maintaining the porous structure by utilizing conventional methods such as impact milling, ball milling, and jet milling. Jet milling in a spiral jet mill has been found capable of producing particles as small as 0.5 micron without lattice destruction or a substantial decrease in open porosity or increase in density. Below a certain size, further reduction may not be warranted since the suspension and dissolving properties of the aerogel particles are so excellent.

Thus, the Examiner is mistaken that Lee et al. teaches a process whereby a second material that is soluble in supercritical fluid is extracted from a composite particle. In Lee et al., as in Daitch et al., a liquid is extracted from a wet gel using a supercritical fluid to produce an aerogel body. Lee et al. differs from Daitch et al. in that

Lee et al. teaches that the resulting aerogel body should be milled to produce inhalable particles. But this is clearly different from that which is claimed in the present application.

In order to further differentiate the sol-gel followed by supercritical extraction processes disclosed in Daitch et al. and Lee et al., applicant has further amended claims 1 and 10 to specify that the second material extracted from the composite particles is a solid selected from the group consisting of lipids, waxes, polymers, sugar acetates and fluorocarbons. This is clearly not taught by Daitch et al. or Lee et al., both of which utilize a supercritical fluid to extract a liquid solvent from a wet gel lattice structure. In view of the amendments to claims 1 and 10, reconsideration of the rejection of claims 1, 3-5 and 10 is respectfully requested.

The amendments to claim 1 should also be deemed sufficient to overcome the rejection of claim 7. Although Chattopadhyay et al. discloses the use of supercritical carbon dioxide to extract a solvent from an emulsion, Chattopadhyay et al. does not teach the use of supercritical fluid for the purpose of extracting a second solid material from a composite particle to form porous particles as claimed. Thus, Chattopadhyay et al. cannot be relied upon to overcome the deficiencies in the teachings of Daitch et al. and Lee et al. Reconsideration of the rejection of claim 7 is thus respectfully requested.

The process disclosed and claimed in the present application is not obvious in view of the processes disclosed in Daitch et al., Lee et al. and Chattopadhyay et al. None of the prior art processes of record involves contacting a composite particle comprising a first material and a second solid material selected from the group consisting of lipids, waxes, polymers, sugar acetates and fluorocarbons with a supercritical fluid to extract the second material and thereby form porous particles comprising the first material. Daitch et al. and Lee et al. disclose the use of a supercritical fluid to extract a liquid solution from a wet gel, thus producing a porous gel body, which Lee et al. teaches can be milled to form porous particles. And Chattopadhyay et al. teaches the use of a supercritical fluid to extract a solvent from an emulsion to produce particles. Applicant's invention is clearly patentable over the prior art of record.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge the same to Deposit Account No. 060625, Order No. FER-15618.001.001.

Respectfully submitted,

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